

AMENDMENTS TO THE CLAIMS

1. (Canceled)

2. (Previously Presented) The method according to claim 25, further comprising measuring the intermediate pressure in the intermediate segment in the absence of injection to the patient; and providing an output indicative of any leakage from the intermediate segment.

3. (Previously Presented) The method according to claim 2, further comprising activating an alarm in response to an output indicative of a leakage of liquid from the intermediate segment.

4. (Previously Presented) The method according to claim 2, further comprising responsive to the output indicative of a leakage from the intermediate segment, maintaining the intermediate pressure greater than the downstream pressure.

5. (Canceled)

6. (Original) The method according to claim 4, wherein maintaining the intermediate pressure comprises activating a pump.

7. – 9. (Canceled)

10. (Previously Presented) The method according to claim 25, wherein the intermediate segment includes a disconnection system having an upstream piece for multiple use and a downstream piece for single use, the method further comprising disconnecting the upstream piece from the downstream piece.

11. (Previously Presented) The method according to claim 10, further comprising decreasing in a controlled manner the intermediate pressure in the intermediate segment prior to disconnecting the upstream piece from the downstream piece to reduce leakage of liquid after disconnection.

12. (Previously Presented) The method according to claim 25, further comprising providing an opening pressure of the regulation system greater than an opening pressure of the first occlusion system to prevent any fluids in the intermediate segment from moving upstream through the regulation system.

13. (Previously Presented) The method according to claim 25, wherein the regulation system includes a non-return valve.

14. – 24. (Canceled)

25. (Previously Presented) A method for injecting liquid under pressure to a patient, the method comprising:

providing liquid under pressure to a patient through a length of tubing, the tubing including a pressurizing system, a first occlusion system and a regulation system located upstream from the first occlusion system, the first occlusion system and the regulation system defining an intermediate segment having an intermediate pressure, the tubing also including a segment downstream of the first occlusion system having a downstream pressure;

wherein due to the action of the pressurizing system, there is a positive pressure during the injection in the intermediate segment and the downstream segment; and

when injection to the patient is desired to be stopped, closing the regulation system and the first occlusion system in such a manner that part of said positive pressure is maintained in the intermediate segment, while the pressure in the downstream segment is not maintained at such positive pressure, at least until the patient is disconnected from the tubing.

26. (Currently Amended) A method for injecting liquid under pressure to a patient, the method comprising:

providing liquid under pressure to a patient through a length of tubing, the tubing including a pressurizing system, a first occlusion system and a regulation system located upstream from the first occlusion system, the first occlusion system and the regulation system defining an intermediate segment having an intermediate pressure, the tubing also including a segment downstream of the first occlusion system having a downstream pressure;

wherein due to the action of the pressurizing system, there is a positive pressure during the injection in the intermediate segment and the downstream segment; and

when injection to the patient is desired to be stopped, closing the regulation system and the first occlusion system in such a manner that the first occlusion system closes when the pressure in the intermediate segment falls below an opening pressure of the first occlusion system, said opening pressure of the first occlusion system being greater than a venous pressure of the patient which corresponds to a ~~predetermined~~ maximum pressure of the downstream segment in the absence of injection, so that part of said positive pressure is maintained in the intermediate segment, while the pressure in the downstream segment is not maintained at such positive pressure, at least until the patient is disconnected from the tubing, in order to direct leakage of fluid from the first occlusion system to the patient.

27. (Previously Presented) The method according to claim 26, further comprising measuring the intermediate pressure in the intermediate segment in the absence of injection to the patient; and providing an output indicative of any leakage from the intermediate segment.

28. (Previously Presented) The method according to claim 27, further comprising activating an alarm in response to an output indicative of a leakage of liquid from the intermediate segment.

29. (Previously Presented) The method according to claim 27, further comprising responsive to the output indicative of a leakage from the intermediate segment, maintaining the intermediate pressure greater than the downstream pressure.

30. (Previously Presented) The method according to claim 29, wherein maintaining the intermediate pressure comprises activating a pump.

31. (Previously Presented) The method according to claim 26, wherein the intermediate segment includes a disconnection system having an upstream piece for multiple use and a downstream piece for single use, the method further comprising disconnecting the upstream piece from the downstream piece.

32. (Previously Presented) The method according to claim 31, further comprising decreasing in a controlled manner the intermediate pressure in the intermediate segment prior to disconnecting the upstream piece from the downstream piece to reduce leakage of liquid after disconnection.

33. (Previously Presented) The method according to claim 26, further comprising providing an opening pressure of the regulation system greater than the opening pressure of the first occlusion system to prevent any fluids in the intermediate segment from moving upstream through the regulation system.

34. (Previously Presented) The method according to claim 26, wherein the regulation system includes a non-return valve.

35. (Currently Amended) The method according to claim 26, wherein said ~~predetermined~~ maximum pressure is close to 0.2 Bar [[bars]].

36. (Currently Amended) The method according to claim 26, wherein said ~~predetermined~~ maximum pressure is at least 0.2 Bar [[bars]].

37. (Currently Amended) The method according to claim 26, wherein said opening pressure of the first occlusion system is greater than 0.2 Bar [[bars]] and equal to or less than 0.8 Bar [[bars]].

38. (Currently Amended) The method according to claim 26, wherein said opening pressure of the first occlusion system is about 0.5 Bar [[bars]].

39. (New) A method for injecting liquid under pressure to a patient, the method comprising:

providing liquid under pressure to a patient through a length of tubing, the tubing including a pressurizing system, a first occlusion system and a regulation system located upstream from the first occlusion system, the first occlusion system and the regulation system defining an intermediate segment having an intermediate pressure, the tubing also including a segment downstream of the first occlusion system having a downstream pressure;

creating a positive pressure in the intermediate segment and the downstream segment with the pressurizing system during injecting of a liquid to a patient; and

preventing backflow away from the patient and into the intermediate segment when injection to a patient is desired to be stopped, by maintaining a greater pressure in the intermediate segment than in the downstream segment, at least until the patient is disconnected from the tubing.

40. (New) The method according to claim 39, wherein preventing backflow comprises activating a pump associated with the intermediate segment.

41. (New) The method according to claim 40, wherein the pump includes a syringe and a syringe driver.

42. (New) The method according to claim 39, wherein preventing backflow comprises adjusting the volume of the intermediate segment.

43. (New) The method according to claim 39, wherein preventing backflow comprises first closing the regulation system and thereafter closing the first occlusion system to produce a greater intermediate pressure than the downstream pressure.